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Discussion

Zero Accident Vision based strategies in organisations: Innovative perspectives

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ABSTRACT

The Zero Accident Vision (ZAV) is a promising approach developed in industry, but not so much addressed by the safety science research community. In a discussion paper in Safety Science (2013) a call was made for more research in this area. Three years later is a good time to take status of developments in this field. A first set of empirical studies has been published, several authors see new perspectives with the vision, while misunderstandings still flourish with a focus on 'zero incidents' as a 'goal', rather than the 'vision' that all occupational incidents are preventable. This has thus given rise to fundamental criticism of ZAV with some authors seeing ZAV as an unjustified and misleading pretention that is counter-productive for safety. In this paper an overview is given of the knowledge developments in this respect, as well as on the discourse on the controversial aspect of ZAV.

There appears to be consensus that merely promoting traditional safety management or accident prevention will not lead to significant new improvements in safety. Six innovative perspectives associated with ZAV are identified and presented in this paper, which together offer a range of possibilities for both industry and for the safety science community to develop new practices and knowledge that may provide significant improvements in safety. The call for more empirical research into this challenging area is relevant for the advocates of ZAV as well as for its critics.

1. Introduction

The Zero Accident Vision (ZAV) is based on the assumption that all (serious) accidents are preventable. ZAV is then the ambition and commitment to create and ensure safe work and prevent all (serious) accidents in order to achieve safety excellence. This is a high ambition and it often gives rise to several misunderstandings that focus on ZAV as a 'goal' of zero accidents, rather than as a 'journey' and a 'process' of creating safe work (safety excellence). ZAV gives rise to fundamental questions such as: Is it in reality possible to prevent all serious accidents, or is this some kind of utopia? And if so, is it also possible (and desirable) to prevent all minor accidents? Don't we need the experience of incidents and accidents to attain knowledge on complex systems' vulnerabilities and remain motivated to safety leadership? How can such a bold ambition be realised, and what strategies are most promising? Etc.

Zwetsloot et al. (2013a) called for more research into this challenging area. The paper stated that ZAV was developed in industry, and needed more attention from safety researchers. The paper received a lot of attention, and was selected as the 'editor's choice' of the Safety Science journal and certainly did generate responses. Now, more than three years later, it seems to be a good moment to take status of developments in this field as some research has already been published within this field, with both positive responses as well as criticism and scepticism in some other papers.

The aim of this paper is to give an overview of the recent ZAV research published so far, to summarise and evaluate the ZAV criticism, to strengthen the scientific discourse on ZAV and to further clarify the innovative perspectives associated with ZAV.

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The paper comprises three parts: (1) the status of the scientific discourse, (2) a short section describing some important developments in policies and practices promoting ZAV (mainly at the level of national and international policy making), and (3) a section focusing on innovative perspectives of ZAV. The latter makes use of the authors' experiences while carrying out a two-year European research project on ZAV implementation in 27 companies, as well as other research findings presented in the first part of this paper.

2. The broader business context for the development of ZAV

In the previous ZAV paper (Zwetsloot et al., 2013a), ZAV was addressed as a member of the 'family of Vision Zero', e.g. zero defects, waste and traffic accidents. The industrial experience with the broader family of Vision Zero was thereby suggested to be an important reason to explain that ZAV was more easily recognised in industrial practice than it was in the safety science community. It actually implied that ZAV was part of a broader development, and that for a large part took place outside the research community. A basic understanding of this broader context wherein ZAV is developed and is still developing might therefore be very useful.

First, attention will be paid to this broader context, making use of a recently published book of a well-known business analyst of future trends (Singh, 2012), as well as an article in the business journal Forbes (Singh, 2014). The book as well as the paper focus on the ten 'Mega Trends' that in the coming decade are likely to have major impacts on the developments in business as well as society at large. Singh defines Mega Trends as "global sustained and macro-economic forces of development that impact businesses, economy, society, cultures and personal lives, thereby defining our future world and its increasing pace of change" (Singh, 2012, p. 4). Examples of the Mega Trends are 'smart is the new green' and 'eMobility', as well as 'innovating to zero'.

According to Singh, 'innovating to zero' is different from the other nine Mega Trends: it is a Mega Vision; it is more a concept than a real happening. It implies the desire for perfection in our society: a 'zero concept' world with a vision on zero carbon emissions, zero crime rates, zero accidents, carbon-neutral cities, etc.

> *"Although this seemingly perfect world sounds almost impossible, the point is that governments and companies today are moving towards this 'picture perfect' vision of eliminating errors, defects and other negative externalities, and along that very journey creating for themselves huge challenges and opportunities. We might not achieve this goal in a decade or ever, in some cases, but we humans can make this as our ultimate goal. Even if we achieve half of the set objective – it will be huge progress. It will make a real difference to society*".
>
> [Singh (2012, p. 46)]

Innovating to zero is not just a mere 'programme' but a way of running and innovating one's business (Singh, 2012, p. 57).

> *"It is not a trend that is incorporated by individuals or companies overnight. It is a gradual process, a journey that will create opportunities, demand investments, and yield long-term returns. The most remarkable feature of this Mega vision is that the ultimate opportunity lies not in attaining the actual goal itself, but in capitalising on the opportunities that would lead to it (our underlining). Success in innovating to zero requires an innovation agenda that bravely talks of breakthroughs in the face of radical goals- goals that intend to create a better world, a zero concept world, which is free of unhelpful externalities and defects. It also needs a strong culture from people within that ecosystem*".
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> [Sing (2012, p. 59)]

The text above emphasises the innovative nature of ZAV, its close relationship with running business, and describes it as a journey generating many opportunities along the way to creating and ensuring safety, and the importance of the organisational culture. This sketches an important context for understanding and evaluating both the industrial experiences with implementing ZAV, as well as the responses to the ZAV 2013a paper. We address the innovative aspects in the last part of this paper.

3. An overview of responses to the ZAV paper and the broader literature

Google Scholar is a useful tool to attain an overview of the responses to scientific papers. In principle it includes all papers in international peer-review journals, but it also aims to include broader (scientific) literature. As of March 4, 2016, Google Scholar mentioned 23 unique citations of the ZAV paper (Zwetsloot et al., 2013a). Three of these publications present empirical research on practices of ZAV implementing companies (Koivupalo et al., 2015; Twaalfhoven & Kortleven, 2016; Young, 2014). We also take into account a recent report that we know of first hand (Zwetsloot et al., 2015). These four publications represent the type of empirical research we hoped to be triggered by the call for research into ZAV' (Zwetsloot et al., 2013a).

Five of the papers mentioned in Google Scholar, all with the same primary author, are critical to the call for ZAV research (Dekker, 2014a,b, 2015; Dekker et al., 2016; Dekker and Pitzer, 2015). We also take into account some other critical publications that were not identified by Google Scholar (Dekker, 2014c,d; Long, 2012; Sharman, 2014), though these do not refer to Zwetsloot et al. (2013a,b), and most of them are not published in peer-reviewed journals.

Apart from the empirical research and the critical publications, several other papers cite the ZAV paper, for instance by including it in review papers. These are respectively focused on the concept of prevention culture (Salminen and Lee, 2015), safety and learning (Drupsteen and Hasle, 2014), and values that support safety, health and well-being at work (Zwetsloot et al., 2013b). Some other papers refer to ZAV as an important development in the introduction or discussion of a research report (e.g. Runyan et al., 2013 and Kines et al., 2013 point out the potential relevance Vision Zero for the safety of young workers), or in non-peer-reviewed journals promoting the ZAV concept (e.g. Deniz, 2015 for Turkey, Aaltonen, 2013 for Africa). There are books promoting zero written by consultants with a wide range of experience in the industry (e.g. Duncan, 2012), and there are publications that, again in the introduction or discussion, address some dilemma's associated with ZAV, e.g. (Ju and Rowlinson, 2015 discuss ZAV in relation to safety for contractors in the Hong Kong construction industry; Nie (2015) shows that commitment to product safety in the Chinese industry may decrease the commitment to work safety).

4. Overview of the empirical findings so far

As the 2013 paper was a call for research, it seems appropriate to start with an overview of the empirical research on ZAV (already mentioned above) published so far. We will concisely summarise the main findings presented.

4.1. New Zealand Aluminium Smelter

Young (2014) described and analysed 25 years of experiences and interventions at the New Zealand Aluminium Smelters Limited (NZAS), where ZAV was introduced in 1990. NZAS has been named in 2007 as the safest aluminium smelter of its class in the world. In